



The importance of fire safety engineering -SFPE from a local and global perspective

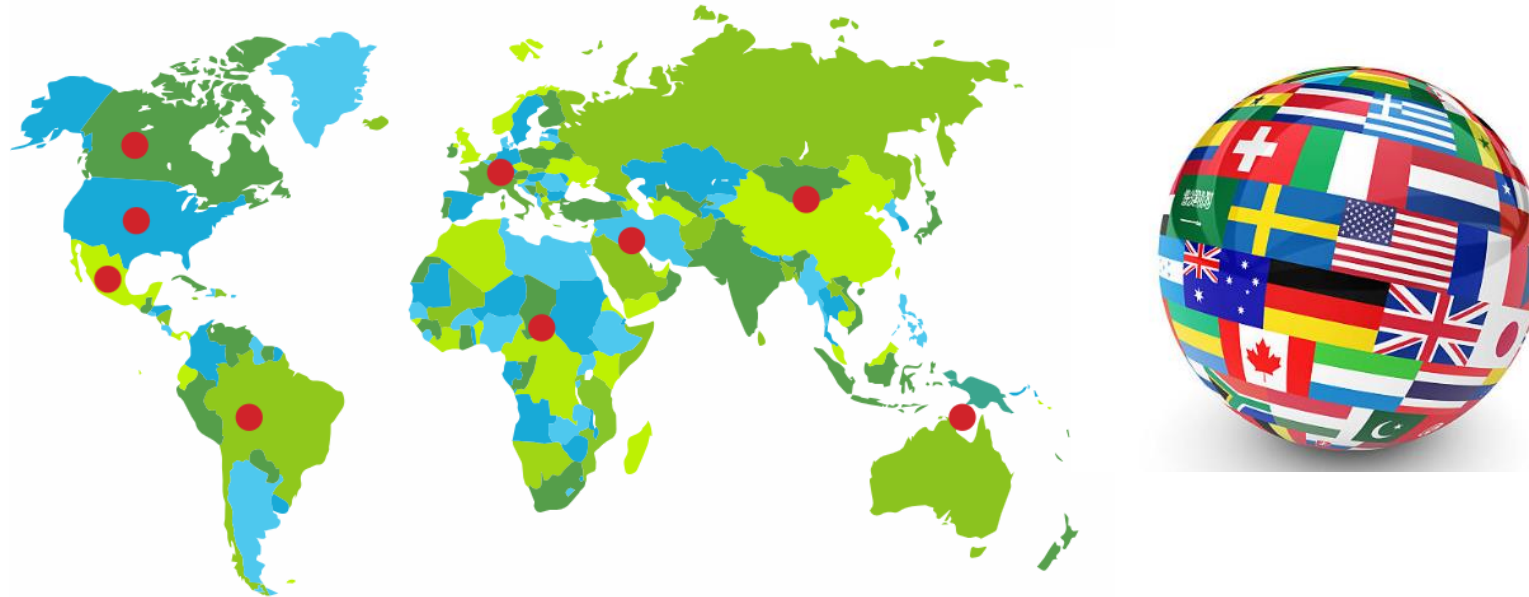
Robert McNamee, Chair SFPE Europe



About SFPE

Mission: To define, develop, and advance the use of engineering best practices; expand the scientific and technical knowledge base; and educate the global fire safety community, to reduce fire risk

SFPE Chapters are worldwide



- Africa Chapters
- Asian Chapters
- Oceania Chapters
- Canadian Chapters
- Latin American Chapters

- European Chapters
- Middle Eastern Chapters
- US Chapters
- University / Student Chapters
- New chapters added quarterly

MEMBERSHIP FACTS & FIGURES

1. MEMBERSHIP IS GROWING

SFPE membership has increased 7.8% since March 2023. In providing top-notch, timely and relevant education, seminars and events our members repeatedly find benefit in membership. Targeted campaigns and updated membership benefits also recruit new members to SFPE.

2. CHAPTERS ARE BRANCHING OUT

With over 122 Chapters and growing, an SFPE Chapter is most likely right around the corner. SFPE Chapters truly carry the mission around the world, bringing local and regional members together. 28 of these chapters are student chapters from institutions across the globe.

3. INCREASING EDUCATION

SFPE's sought after education is easier to access than ever. Over 55 webinars, seminars and in-person events were offered over the past year, across the United States and International locations.

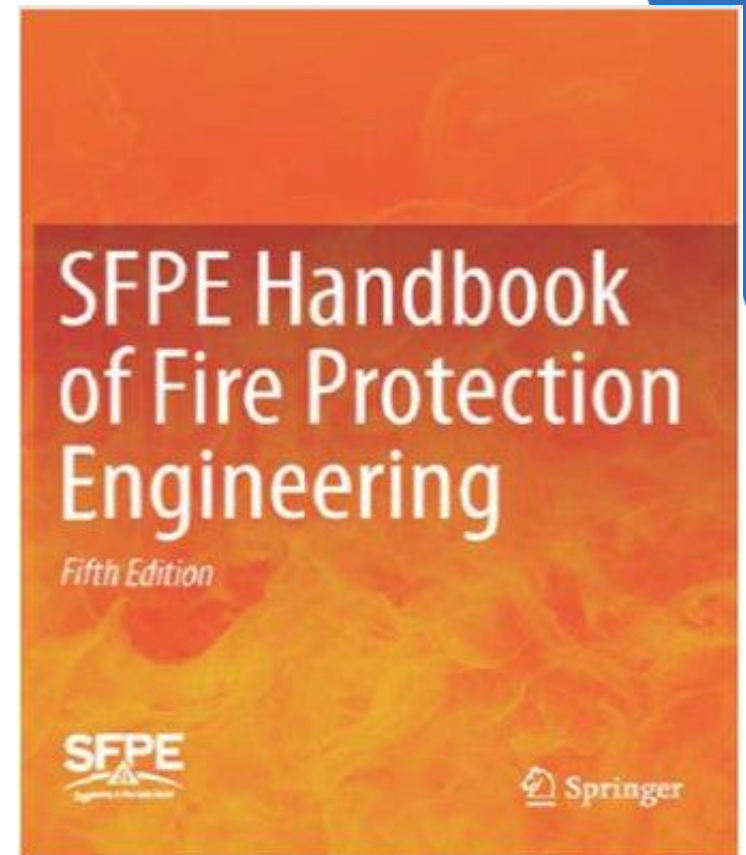
Strategic Activities – Technical (examples) Complete list at:

<https://www.sfpe.org/about-sfpe/governance/strategicplan>

- After the 6th edition of SFPE Handbook of Fire Protection Engineering is published, develop plan to maintain Handbook as a living document.
- Start development of new standards or guides on emerging issues in profession.
- Continue to ensure engineering approaches (PBD, Risk, etc.) are incorporated into the global building/fire codes.

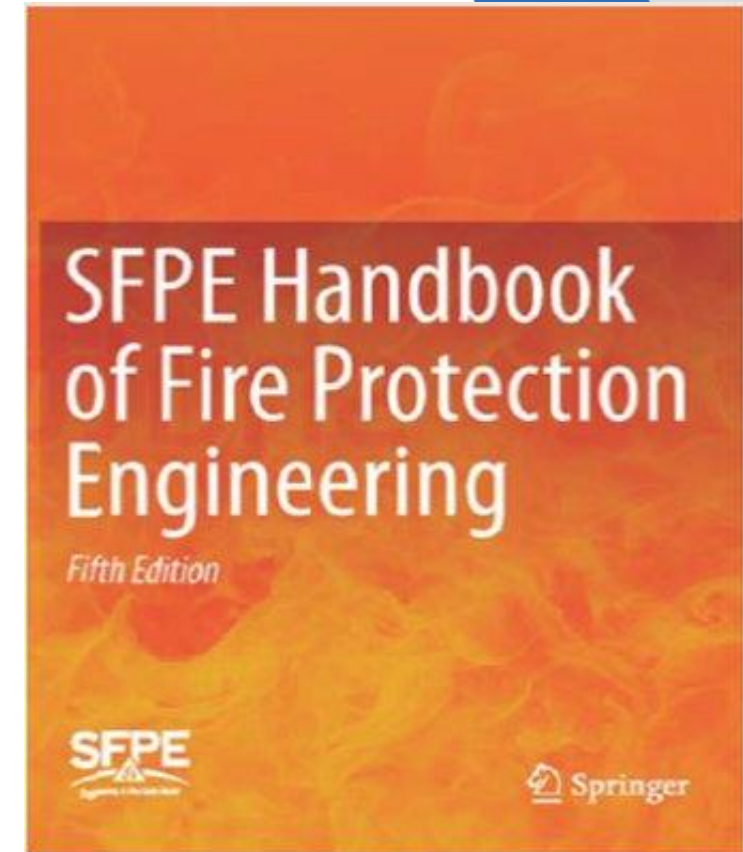
SFPE Handbook of Fire Protection Engineering

- 6th edition to be published in Summer 2024
- Available in hard copy and digitally from Springer
- Topics Include:
 - Fire Protection Engineering Practice
 - Fire Chemistry
 - Heat Transfer
 - Fire Tests
 - Fire Dynamics
 - Fire Protection Systems
 - Structural Fire Protection
 - Human Behavior
 - Industrial Fire Protection
 - Risk & Reliability
 - Wildland Fires (WUI)



SFPE Handbook of Fire Protection Engineering - New Content

- New Sections on Fire Testing & WUI
- Significant revisions to structural fire section to include performance-based approaches
- New content:
 - Fire investigations
 - Passive fire protection
 - Flame extinction by active systems
 - Building under construction
- New sustainability related content:
 - Li-Ion Batteries & Energy Storage
 - Revised content on mass timber
 - Revised content on building envelop
 - Refrigerants



SFPE Publications

- Five new publications added to SFPE Engineering Series

[Residential Fire Safety](#)

An Interdisciplinary Approach

Editors: Marcus Runefors, Ragnar Andersson, Mattias Delin & Thomas Gell

Copyright: 2023

[Hard cover](#) | [Soft cover](#) | [eBook](#)



[SFPE Guide to Fire Risk Assessment](#)

SFPE Task Group on Fire Risk Assessment

Authors: Austin Guerrazzi

Copyright: 2023

[Hard cover](#) | [Soft cover](#) | [eBook](#)



[Handbook of Fire and the Environment](#)

Impacts and Mitigation

Editors: Brian J. Meacham & Margaret McNamee

Copyright: 2023

[Hard cover](#) | [Soft cover](#) | [eBook](#)



[Predicting Room of Origin Fire Hazards](#)

Authors: The Society of Fire Protection Engineers

Copyright: 2023

[Hard cover](#) | [Soft cover](#) | [eBook](#)



[Testing of Materials for Fire Protection Needs](#)

European Standard Test Methods for the Building

Authors: Linda Makovická Osvaldová & Widya Fatriasari

Copyright: 2023

[Hard cover](#) | [eBook](#)



TIMELINE

Core Competencies



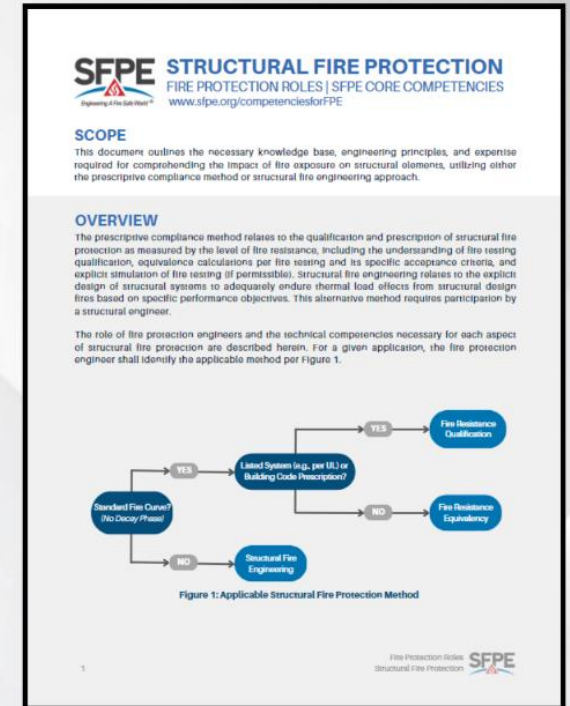
2018

Competency & Credentialing Subcommittee (CPQ C&C) publishes Minimum Technical Core Competencies



2021

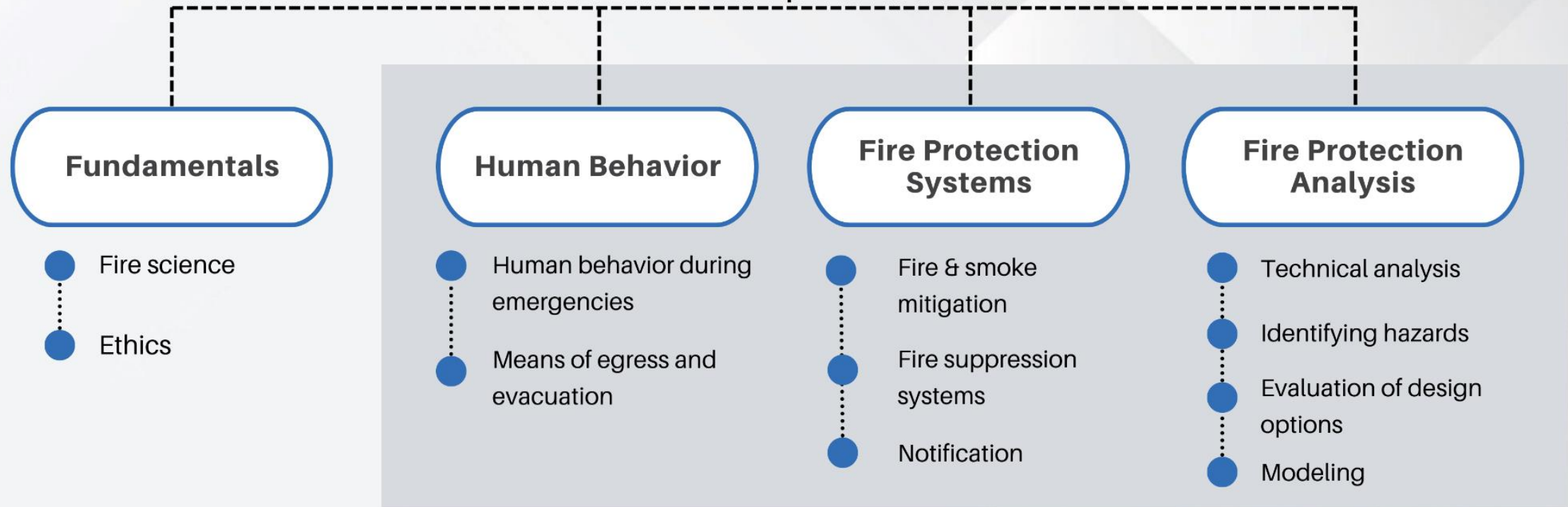
CPQ C&C defines the Fire Protection Engineering Roles



2023

CPQ C&C begins issuing detailed scope documents for each of the Fire Protection Engineering Roles for public comment

Minimum Technical Core Competencies (2018)



Competent Fire Protection Engineers have **basic** knowledge of each of these areas through education and experience, regardless of their specialty/role.

Available at www.sfpe.org



SFPE CHAPTERS

Over 120 Chapters
worldwide

Leadership



Chapter Leadership Council: Chapter-to-chapter sharing of exceptional best practices designed to improve chapter performance.

Chapter Leadership Forum: in-person sessions to help with all aspects of leading a chapter.

Award of Chapter Excellence (ACE): Gold, Silver, and Bronze levels awarded to exceptionally performing chapters

SFPE CHAPTERS

Partnership

SFPE Europe, an entity since 2020, has its own BOD, 24 chapters strong, and multiple meetings throughout the year.

SFPE Canada (coming soon), defining mission/vision, seeking closer cooperation through Canadian chapters.

SFPE Asia/Oceania Cooperation Group, virtual networking, and exchange of current projects and events.

SFPE Europe

20

Chapters

4

Student Chapters

SFPE CHAPTERS

Engagement



Joint Symposia: Chapters collaborate with SFPE HQ on symposia and help with organizing meetings and events.

Organizing committees: chapter representatives work with SFPE staff on various aspects of organizing conferences, from abstract approval to programming and site visits.

A snapshot of the activities in the Swedish SFPE chapter two years ago

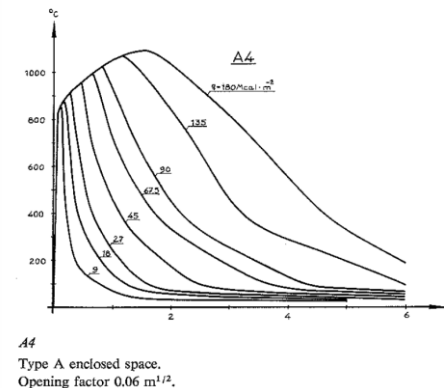
The Swedish context

Fire Safety Engineering in Sweden

- 1963: Groundbreaking study by Kai Ödeen, *"Theoretical Study of Fire Characteristics in Enclosed Spaces"*
- 1968, January 1: Swedish regulations changed so alternative fire scenarios was allowed.
- 1970: The Swedish fire curves was "born", Magnusson and Thelandersson, *"Temperature-time curves of complete process of fire development. Theoretical study of wood fuel fires in enclosed spaces"*
- 1979: Brandforsk, a research sponsor dedicated to the fire area was created
- 1986 The Fire Protection Engineering program on bachelor level was initiated at Lund University
- 1996 The Swedish SFPE chapter was born!
- 2006 The Fire Protection Engineering program on bachelor level was initiated at Luleå University

Kai Ödeen

Sven
Thelandersson



9 members

2 adjunct student
members

The board



Local meeting two
times per year

5 regional
local groups



A group of members
doing reviewing

Review of Swedish regulations and handbooks



Brandskyddsföreningen

SWEDISH FIRE PROTECTION ASSOCIATION

A conference with
focus “brandteknisk
ingenjörsvetenskap”
(fire engineering
science)

Swedish
conference
every
second year



Simo Hostikka, one of the Keynotes 2020

Awards

Prize for notable
achievement



Marcus Runefors 2020



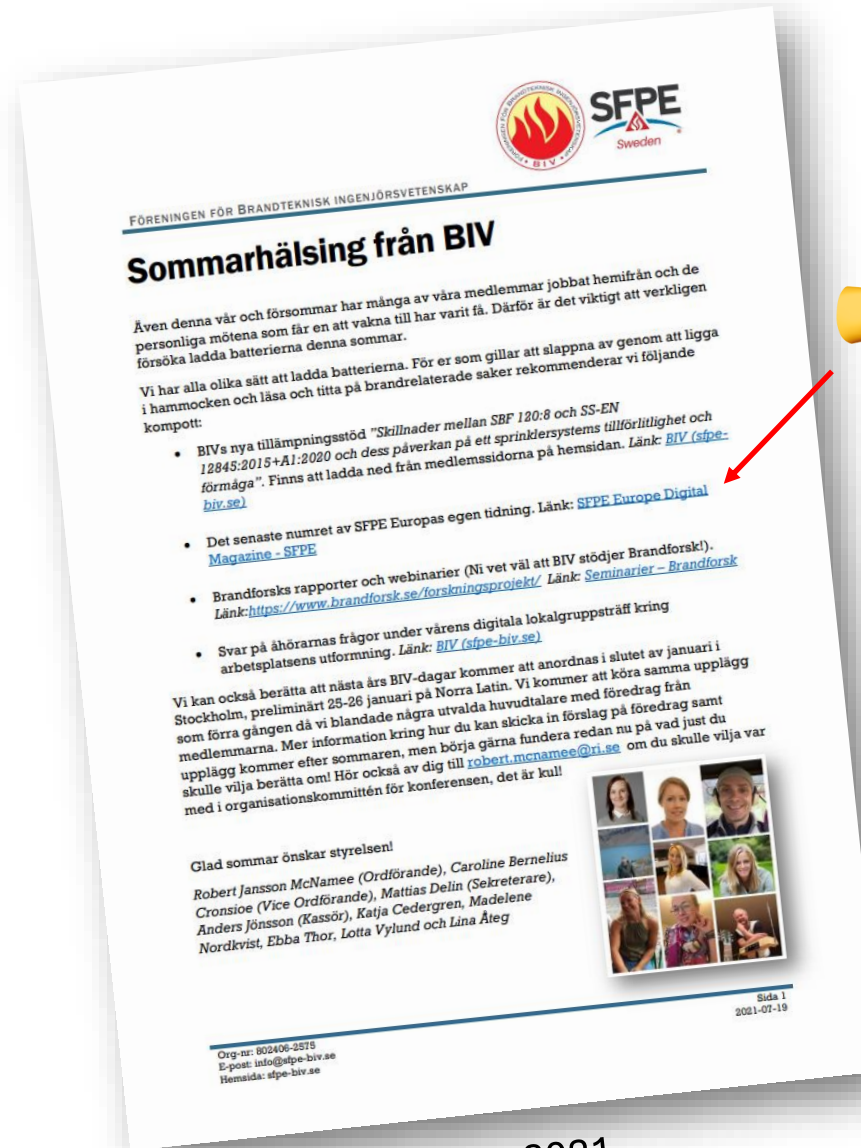
Ida Texell
2021



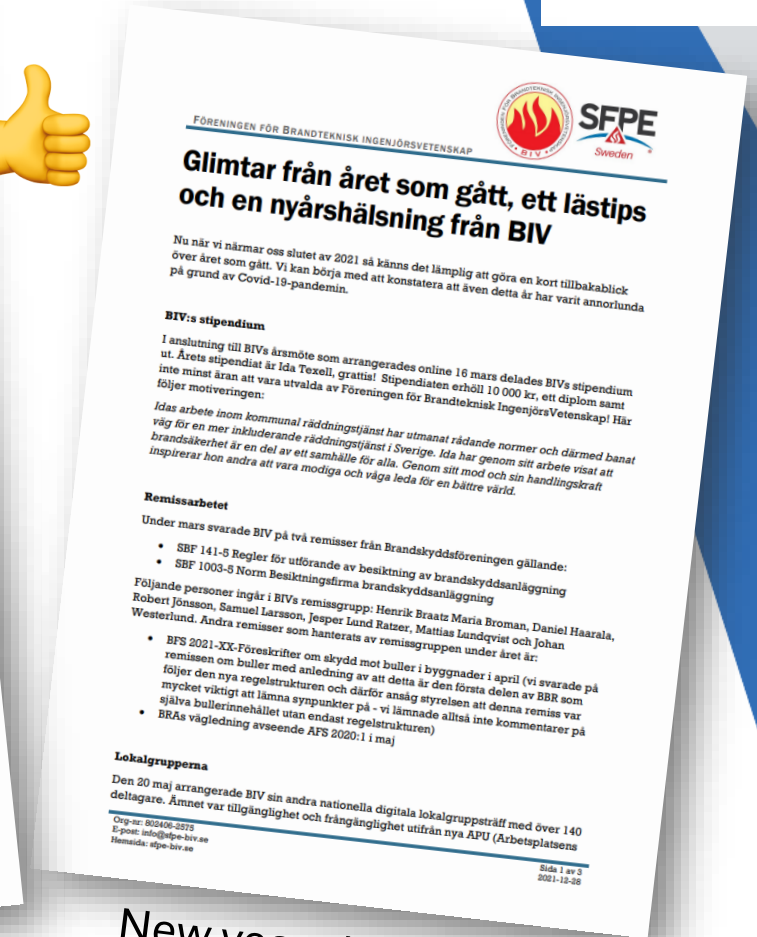
Therese Göras and
Nils Olsson 2019

- E-mail list
- Homepage including a restricted area only for members
- LinkedIn

How to reach the members



Summer greeting 2021



New years letter 2021

Publications

Best practices on fire safety engineering (Swedish perspective)



Publications

Round Robin CFD-calculations



A Round Robin Study on Modelling with FDS

In recent years, different comparisons, so-called round robins, have been conducted to study the variation in results from individual users of complex software. Such comparative studies show that, in many cases, the results are far from equal, even when participants receive identical instructions have been given and use the same software. Based on this, the Swedish Chapter of SFPE (locally called BIV) initiated a new study to investigate how much engineering choices are involved in modelling with the CFD model Fire Dynamics Simulator (FDS). The chapter chose FDS for the study because it is widely used in performance-based fire safety design and has a large number of parameters and inputs that can be adjusted.

[Read more...](#)

1 | INTRODUCTION

There are several different computer models available for different types of analytic fire safety design; the use of such models has increased during the last decades with the increased use of performance-based design. The fluid dynamics model, Fire Dynamics Simulator (FDS)¹ is currently the most used computer model for smoke- and filling calculations in Sweden.² FDS has been developed by NIST, and the model has been shown to predict gas temperatures and the spread of smoke in multi-room geometries very well.

When using complex models, a so-called "Black Box Effect", which implies that the user has a limited understanding of how the model works, can occur. If such circumstances are present, it is difficult for the user to analyse the reliability of the result. When it comes to smoke filling calculations it is important that the user knows the

phenomenon that is modelled (in this case fire dynamics) and how the model works, in order to specify the appropriate input and interpret the results. One example of this is modelling of fire plumes in FDS where the relationship between the heat release per unit area and the mesh size must be within a certain range otherwise the air entrainment in the plume becomes unnatural. This is something that a user with good knowledge in fire dynamics should be able to detect.

In Sweden, the National Board of Housing, Building and Planning (Boverket) issued general recommendations for analytical design of building fire protection (BBRAD)³ in 2011. The reason behind issuing these recommendations was that differences in analytical designs were large and that decision and assumptions (eg. when a design fire was determined) in designs could be adapted to fit the building design without a sound physical background.³ Nowadays BBRAD can be seen as well established in the country and it is consulted in all types of design.

Publications

Summary of our members questions regarding wood in buildings

Questions from active members with the following occupancies:

- Fire consultants
- Insurance companies
- Rescue service
- City planning offices
- Hospital owners
- Universities
- Supplier of fire protection equipment

43 unanswered questions regarding wood and fire!



It is important to have fun!



SFPE Foundation



About

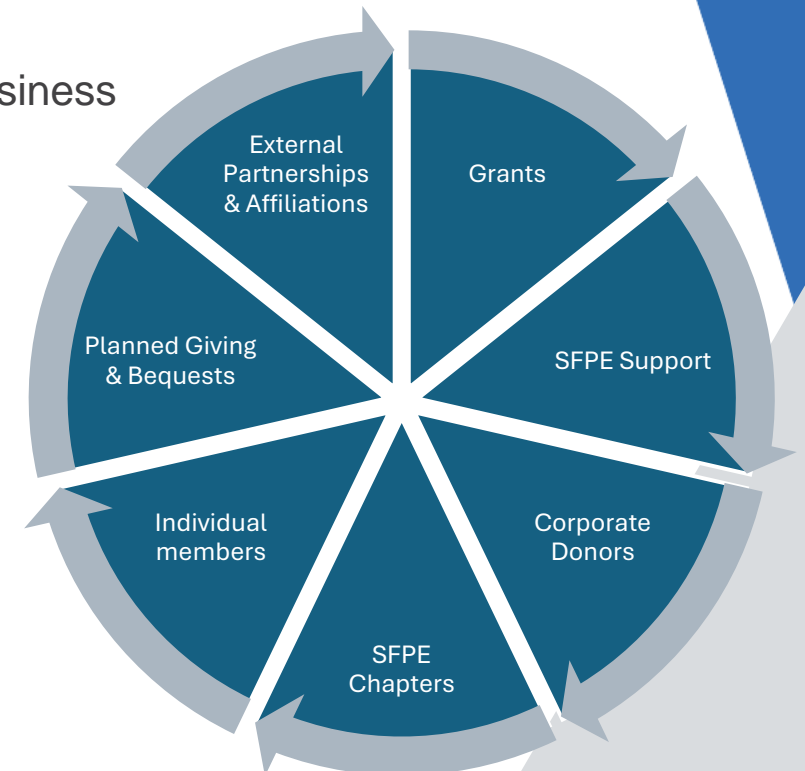
- 501c3 charitable non-profit established in 1979
- **Mission:** To enhance the scientific understanding of fire and its interaction with the social, natural, and built environments.
- **Vision:** Engineering a resilient, sustainable, fire-safe world for all.

Governance

- 17-member Board of Governors
- Staff: Foundation Director, Research Manager, Industry Partnerships & Business Development Manager, Database & Partnership Operations Manager
- Strategic Plan 2022 – 2025 focuses on four strategic goal areas:
 - Sustainable Resources
 - Diversity, Equity, Inclusion, & Access
 - Innovation for Impact
 - Global Reach

Operations Support

- In-kind support from SFPE
- External partnerships and grants, e.g., FEMA FP&S grants; Grand Challenges Initiative
- Donations from individuals, industry, and SFPE Chapters



SFPE Foundation

Grand Challenges Initiative

- 34+ GCI Founding Partners; 80+ GCI Working Group members
- Published 4 white papers in GCI topic areas outlining 10-year plan for strategic cooperation in research, education, and outreach
- 3 **Major Research Grants** active in 2024 address GCI priorities:
 - *Environmental and Health Impacts of Thermal Runaway Events in Outdoor Lithium-Ion Battery Energy Storage System Installations*
 - *Fire Testing of Resilient and Sustainable Building Materials*
 - *Interface Between Digital Buildings and Fire Service Operations*



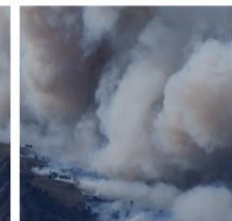
Wildland-Urban Interface Initiatives

- **FEMA 2020 & 2022 Grants:** Creating and expanding the free WUI Virtual Handbook for Fire Service personnel and WUI community members: www.sfpe.org/wuihandbook
- **FEMA 2021 Grant:** Creating 2-day training for US Fire Service personnel on Fire Protection Engineering Basics, Individual Asset Protection, Community Notification & Evacuation, and Community Wildland Fire Protection
- **WUI Working Group Initiative:** Driving development of WUI expertise across the global fire engineering community

Available now!
SFPE Educational & Scientific Foundation
2023 Annual Report



To download, scan the QR code or visit
<https://bit.ly/SFPEFoundation2023>



SFPE Foundation



Student & Award Funding Opportunities

- **Student Research Grants:** apps due in March & October annually; 5k USD per student; about 8 awards per year
- **Annual Awards:** Student Scholar Award (2 awards, 1k each); Mowrer Global Scholar Award (1 award, 1k); Proulx Scholar Award (1 award, 5k total)
- **Guise Medal:** 1 award annually, 2k USD + keynote presentation
- **Bono Award:** 1 award annually, 2k USD for outstanding research article published in *Fire Technology* journal



40 Student Beneficiaries in 15 Countries Since 2021

Other Activities & Resources

- **Open Access Research in Fire Engineering** webinar series provides pro dev hours at no cost (membership not required)
- Virtual **technical presentations** available to SFPE Chapters (contact Dr. Leslie Marshall at foundation@sfpe.org)
- **Research reports** available for free on our website
- Check out our online **Research Impact Explorer** to see the latest Foundation-funded research projects



WEBSITE: <https://www.sfpe.org/foundation/home>

2024 EVENTS

- Fire Safety Conference on Performance-based Design, Copenhagen, Denmark April 17-19, 2024
- Engineering Symposium: Progress with Li-Ion Battery Fire Safety: Engineering Solutions to Mobility and Storage Hazards, Phoenix, AZ, June 4-6, 2024
- Annual Conference & Expo, Louisville, KY, October 6-8, 2024

SAVE THE DATE



ATTEND | SPEAK | EXHIBIT | SPONSOR



SFPE

Engineering Solutions Symposium

Progress with Li-Ion Battery Fire Safety: Engineering Solutions to Mobility and Storage Hazards

June 4-6, 2024

Phoenix, Arizona

SFPE
2024 ANNUAL
CONFERENCE & EXPO
LOUISVILLE

Where the world's brightest minds in fire protection and fire safety engineering come together to learn, network, engage, and be inspired

sfpe.org/annual24

ATTEND | SPEAK | EXHIBIT | SPONSOR



SFPE

Engineering Solutions Symposium

Progress with Li-Ion Battery Fire Safety: Engineering Solutions to Mobility and Storage Hazards

June 4-6, 2024

Phoenix, Arizona

- Day 1 – Thermal Runaway and Hazards Fundamentals
Codes & Standards
- Day 2 & 3 -- Bulk Storage of Battery Products and Hazards of Deployed Products including electric vehicles, micro mobility and energy storage systems. Presentation will cover design considerations as well as mitigation strategies.
- More Information Can be Found at: <https://www.sfpe.org/events-education/liveeducation/in-personeducation/liionsymposium>

FPE Magazine

- Quarter 4, 2023 -- Fire Safety of Batteries and Micro-mobility Devices. BY DANIEL MADRZYKOWSKI, PhD, PE, FSFPE, AND CRAIG WEINSCHENK, PhD
- Quarter 2, 2022 -- TOWARD FIRE-SAFE ELECTRIC VEHICLES BY ROELAND BISSCHOP
- Quarter 2, 2022 -- FIRE PROTECTION STRATEGIES FOR ENERGY STORAGE SYSTEMS BY JASON A. SUTULA, PhD, PE
- More info at www.sfpe.org





Thank you for you attention!

Robert McNamee, Chair SFPE Europe

www.sfpe.org